PCN98

COST-EFFECTIVENESS OF A EUROPEAN COMMUNITY-BASED INTERVENTION: "10,000 STEPS GHENT"

De Smedt D[1], De Cocker K[1], Cardon G[1], De Bourdeaudhuij I[1], Annemans L[2]
[1]Ghent University, Gent, Belgium; [2]Ghent University—Brussels University, Ghent, Belgium

OBJECTIVES: Physical inactivity is linked with inverse health effects and chronic disease. The aim of this study was to evaluate the cost-effectiveness of the European community-based project "10,000 Steps Ghent." a published comparative controlled trial showed that the intervention resulted in a significant decrease in sedentary time and a significant increase in step counts (896 steps/day) and self-reported walking time (66 minutes/week). **METHODS:** A Markov model, with a time horizon of 20 years and a cycle length of 1 year was designed in Excel to estimate the development of diabetes, cardiovascular events, and colorectal cancer. All individuals start in a health-state free of events. The model transitions were age dependent and based on epidemiological data. The effect of the intervention was based on published relative risk reductions (RRR) related to increased walking time. Costs (from a public payer perspective) and utility decrements related to events were obtained from published literature. To assess the impact of the uncertainty of the parameters on incremental costs and QALYs one-way sensitivity analyses and a Monte Carlo analysis were performed. **RESULTS:** Implementing the community-based program increased average QALYs with 0.14 to 12.50 QALY and decreased the total costs with approximately €490 to €2749. Hence, the intervention program was dominant. One-way sensitivity analyses indicated that relative risk reductions had the most pronounced effect on the incremental QALYs and costs, however without changing the conclusion of dominance. The results of the Monte Carlo analysis were favorable as well and the intervention, based on 5000 simulations, remained dominant. **CONCLUSIONS:** The community-based "10,000 Steps Ghent" campaign is a dominant intervention. Sensitivity analyses have proved the robustness of the results; hence, implementing this intervention on a population-based level could lead to improved health outcomes and reduced costs.

PCN99

COST-EFFECTIVENESS OF IMATINIB AS ADJUVANT TREATMENT FOR RESECTED GASTROINTESTINAL STROMAL TUMORS (GIST) VERSUS BEST SUPPORTIVE CARE: CANADIAN PERSPECTIVE

El Ouagari K[1], Pawar V[2], Coombs J[3], Rubin J[2]
[1]Novartis Pharmaceuticals Canada, Dorval, QC, Canada; [2]i3 Innovus, Medford, MA, USA; [3]Novartis, Florham Park, NJ, USA

OBJECTIVES: Clinical studies have highlighted the high risk of recurrence following complete resection of primary GIST. Published data from the phase III (ACOSOG Z9001) trial have demonstrated significant clinical benefit with adjuvant imatinib versus placebo with respect to recurrence-free survival (RFS 98% vs. 83% at 1 year). We conducted a health economic evaluation for imatinib as adjuvant therapy for GIST that can be used to support this indication. **METHODS:** A Markov model was used to project lifetime outcomes and costs for patients who undergo complete gross resection of primary GIST. Cost-effectiveness was measured in terms of the incremental cost per quality-adjusted life-year (QALY) gained with the addition of imatinib. Probabilities of disease recurrence, resource use, utilities, and costs were derived from ACOSOG Z9001 trial and other secondary sources. Results were generated under three scenarios regarding the treatment duration with imatinib: 1-year, 3-year, and continuous treatment with imatinib. **RESULTS:** Adding imatinib was projected to result in a gain of 0.745, 1.538, and 5.180 QALYs assuming 1-year, 3-year, and continuous treatment scenarios, respectively. These clinical benefits of imatinib are obtained at an additional expected per-patient lifetime cost of $30,042, $81,125, and $345,360 assuming 1-year, 3-year, and continuous treatment scenarios, respectively. The incremental cost per QALY gained with imatinib was therefore $40,328, $52,760, and $66,669 assuming 1-year, 3-year, and continuous treatment scenarios, respectively. Deterministic sensitivity analyses showed the results to be robust with respect to variations in assumptions and estimates. The probability that imatinib is cost-effective given a threshold value of $100,000 per QALY was over 98% in all scenarios. **CONCLUSIONS:** Results of this evaluation suggest that, from a Canadian health-care system perspective, imatinib is cost-effective and represents good value for the money according to currently accepted standards of cost-effectiveness.

PCN100

COST-EFFECTIVENESS OF GEFITINIB VERSUS DOUBLET CHEMOTHERAPY IN FIRST-LINE TREATMENT OF NON-SMALL CELL LUNG CANCER (NSCLC) IN SWEDEN

Jacob J, Henriksson M, Brattström D
AstraZeneca Nordic MC, Södertälje, Sweden

OBJECTIVES: The IPASS study (NCT00322452) showed that in patients with EGFR mutation-positive tumors (EGFRm+), gefitinib significantly increased progression-free survival (PFS) compared with doublet chemotherapy, reducing the risk of progression by 52% (HR 0.48, 95% CI 0.36 to 0.64, $P < 0.001$) and increasing median PFS by 3.2 months (9.5 months vs. 6.3 months) for the first-line treatment of advanced non-small cell lung cancer (NSCLC). The aim of the study reported here was to evaluate the cost-effectiveness of a clinically relevant treatment strategy with gefitinib based on data from IPASS. The strategy with gefitinib involves EGFR mutation testing prior to treatment, followed by selective gefitinib treatment of EGFRm+ patients and doublet chemotherapy for EGFRm- patients and patients with unknown mutation status, and is compared to treating all patients with doublet chemotherapy without mutation testing. **METHODS:** A Markov model was developed to integrate IPASS study data with external data on costs and quality of life. The model estimated costs and QALYs from a lifetime horizon for each treatment strategy. The key clinical data inputs were event rates of PFS and overall survival data. Other important parameters, e.g., prevalence of EGFRm+, cost of EGFR-diagnostics, resource utilization, and utility estimates were retrieved from the literature. **RESULTS:** The test and treat strategy, including gefitinib, was associated with a QALY gain of 0.0116 at an incremental cost of €300 yielding a cost per QALY gained of €25,900. **CONCLUSIONS:** This cost-effectiveness analysis of the IPASS study demonstrates that testing patients for EGFR status, followed by gefitinib treatment for EGFR m+ patients is a cost-effective option compared to treating all patients with doublet chemotherapy in a Swedish setting.

PCN101

COST-UTILITY ANALYSIS OF DASATINIB AS A SECOND-LINE TREATMENT IN THE CHRONIC PHASE OF CHRONIC MYELOID LEUKAEMIA IN RUSSIA

Kuznetzov S[1], Mungapen LJ[2], Samyshkin Y[2], Jakouloff DE[3], Sbarigia U[4], van Baardewijk M[4]
[1]Haematology Research Centre, Moscow, Russia; [2]IMS Health, London, UK; [3]BMS, Moscow, Russia; [4]BMS, Braine l'Alleud, Belgium

OBJECTIVES: To evaluate the cost-effectiveness of dasatinib 100 mg once daily in second-line therapy for chronic myeloid leukemia (CML) patients in the chronic phase (CP) resistant to imatinib 400 mg compared with imatinib 800 mg and nilotinib 800 mg in Russia. **METHODS:** A Markov cost-utility model was developed to estimate lifetime outcomes and resource use reflecting treatment practice for CML patients in Russia. Treatment efficacy, disease progression, and rates of adverse events in the model were based on published multicenter randomized controlled trials. **RESULTS:** Dasatinib appeared to be dominant over imatinib and nilotinib in CP-CML in the Russian setting. Incremental life expectancies were 0.17 years and 0.26 years when comparing dasatinib with imatinib and nilotinib, respectively; quality-adjusted life-years (QALYs) gains were of 0.18 and 0.22 QALY versus imatinib and nilotinib, respectively. The life-years and QALY gains on dasatinib treatment were due to a larger proportion of patients who achieved complete cytogenic response (CCyR). Mean cost saving per patient over a lifetime horizon with dasatinib were Rubles (RUB) 1,364,220 versus imatinib and RUB 778,621 versus nilotinib. Limitations of the model include a lack of direct comparative efficacy data at licensed doses, which precluded formal indirect comparison. **CONCLUSIONS:** Dasatinib was a dominating strategy, resulting in outcome gains (greater life expectancy and greater quality-adjusted life expectancy) and cost saving compared both to nilotinib and high-dose imatinib in CP-CML patients. Expanding access to new tyrosine kinase inhibitors for the treatment of CP-CML in Russia would ensure a greater choice of modern and effective therapies.

PCN102

COST-EFFECTIVENESS OF DIGITAL MAMMOGRAPHY IN A BREAST CANCER POPULATION-BASED SCREENING PROGRAM

Comas M[1], Arrospide A[2], Mar J[2], Roman R[1], Sala M[1], Hernandez C[1], Castells X
[1]Hospital del Mar-IMIM, CIBER de Epidemiología y Salud Pública (CIBERESP), Barcelona, Spain; [2]Hospital Alto Deba, Mondragon, Spain

OBJECTIVES: The introduction of digital mammography presents benefits at the technological. However, there are doubts about its impact on the effectiveness of breast cancer screening. The aim of this study was to analyze the cost-effectiveness of the introduction of digital mammography in a population-based breast cancer screening program. **METHODS:** A discrete-event simulation model was implemented including the processes under a breast cancer screening program and the natural history of breast cancer. The screening events included: invitation (biennial) of the target population (women aged 50–69 years), participation, screening test, confirmatory tests after a positive mammography result, cancer diagnosis, and treatment. Natural history of breast cancer included the following health states: no cancer, preclinical (nonsymptomatic) cancer, clinical (or symptomatic) cancer, and death. Natural history was modeled as time until a change of health state, and health states were managed using attributes in order to condition the sensitivities and specificities of the tests to the current health state of the woman. Interval cancers were also detected according to the health state. Digital and analogical mammography had the same sensitivity, but different specificities were applied according to type of mammography and also initial or successive screening. Cost-effectiveness was calculated under a 20-year screening scenario and five simulations. **RESULTS:** Simulation started with a target population of 28,020 women. Other 29,552 women were enrolled in the target population during the simulated 20 years. This population resulted in 56,136 screening mammograms. The number confirmatory tests needed was 1864 under analogical mammography and 1724 under digital screening. Screen-detected cancers were 344 with analogical screening and 312 with digital screening. The overall ICER was €349.14. **CONCLUSIONS:** Results suggest that population-based breast cancer screening with digital mammography is cost-effective. It does not improve the results of conventional analogical mammography, but it reduces the cost in confirmatory tests.

PCN103

COST-EFFECTIVENESS ANALYSIS OF ADDING HPV VACCINATION TO CERVICAL CANCER SCREENING PROGRAM IN HUNGARY

Vokó Z[1], Nagyjanosi L[2], Kalo Z[1]
[1]Eötvös Loránd University, Budapest, Hungary; [2]Syreon Research Institute, Budapest, Hungary

OBJECTIVES: Despite opportunistic and organized screening, mortality of cervical cancer is still high in Hungary in international comparison. The study aimed to

investigate the cost-effectiveness of including HPV vaccination in the preventive strategy of cervical cancer. **METHODS:** We developed an interactive Markov model based on modeling disease progression. Data on prevalences, incidences, test characteristics, efficacy of vaccination and of cancer treatments, and quality of life of cervical cancer patients were taken from the scientific literature. Data on the costs of screening and of cancer treatments were provided by the Hungarian National Health Fund. We applied 5% discount rate for both cost and utility values. The effect of herd immunity was taken into account in the model. GDP PPP exchange rate in 2009 was employed to convert local currency to EUR (1 EUR = 158 HUF). **RESULTS:** We analyzed the cost-effectiveness of different scenarios. In case of the most likely scenario to come through—vaccination at age 12, coverage 80%, vaccine effectiveness against HPV16/18 (responsible for 72% of cervical cancers caused by HPV) being 95%, vaccine is efficient for at least 20 years, the effectiveness of the screening program is not improved radically—the ICER for vaccination was €49,587/QALY compared to no screening. **CONCLUSIONS:** As disease burden of cervical cancer is high in Hungary, including HPV vaccination in the preventive strategy of cervical cancer would result in a cost-effectiveness ratio below the implicit upper threshold (3× GDP/capita = €49,986 in PPP).

PCN104

SOCIETAL COST SAVINGS IN METASTATIC NON-SMALL CELL LUNG CANCER (NSCLC) IN FRANCE

Stanisic S[1], Vergnenegre A[2], Chouaid C[3], Mueller E[1], Walzer S[4]
[1]Analytica International Inc., Loerrach, Germany; [2]SIME, Limoges, France; [3]Hôpital St. Antoine, Paris, France; [4]F. Hoffmann-La Roche Pharmaceuticals AG, Basel, Switzerland

OBJECTIVES: Bevacizumab in combination with platinum-based chemotherapy improves progression-free survival (PFS) over chemotherapy alone in advanced or metastatic NSCLC. The aim of this analysis was to assess potential cost savings for society derived from the clinical benefits of bevacizumab-based therapy in metastatic NSCLC patients returning to work in France. **METHODS:** Indirect cost calculation was performed using human capital approach in the population of progression free metastatic NSCLC patients. Clinical outcomes in terms of PFS from the two bevacizumab phase III trials (Reck et al. 2009, Sandler et al. 2006) were applied to the incidence cases of nonsquamous metastatic NSCLC patients in France, taking into account only age groups eligible to work. Clinical experts were consulted to estimate the percentage of PFS patients who return to work after the induction phase. It was estimated that 20% of PFS patients, below 55 years of age and with performance status 0–1 would maintain their prior employment status (60% part time, 40% full time). Cost savings were analyzed for 1 year and 1.5 year time horizons applying French labor costs. **RESULTS:** Indirect cost savings per patient returning to work were €21,667 at year 1 and €39,001 at year 1.5. a change in employment pattern (40% part time, 60% full time) led to an approximate 14% increase of savings for both time horizons (€24,763 at year 1 and €44,573 at year 1.5). a 10% alteration of labor cost in either direction resulted in cost savings that were 10% higher/lower. **CONCLUSIONS:** Bevacizumab-based therapy could result in considerable cost savings in progression-free NSCLC patients. This societal economic benefit adds to the patients' clinical benefit of increased survival outcomes.

PCN105

COST SAVINGS ASSOCIATED WITH BEVACIZUMAB-BASED THERAPY IN PATIENTS WITH METASTATIC NON-SMALL CELL LUNG CANCER (NSCLC) IN GERMANY

Schmidt E[1], Bischoff HG[2], Heigener DF[3], Stanisic S[1], Walzer S[4]
[1]Analytica International Inc., Loerrach, Germany; [2]Thoraxklinik Heidelberg GmbH, Hedelberg, Germany; [3]Krankenhaus Grosshansdorf, Grosshansdorf, Germany; [4]F. Hoffmann-La Roche Pharmaceuticals AG, Basel, Switzerland

OBJECTIVES: First-line treatment of advanced or metastatic NSCLC patients with bevacizumab demonstrated significantly improved progression-free survival (PFS) when added to platinum-based chemotherapy (Reck 2009; Sandler 2006). The aim of this analysis was to investigate whether this clinical benefit would translate into cost savings due to reduced productivity losses in metastatic NSCLC patients who return to work while treated with bevacizumab-based therapy in Germany. **METHODS:** Potential cost savings were calculated on the basis of reduced productivity losses for patients returning back to work during PFS periods of 1 and/or 1.5 years, applying the human capital approach. The percentage of progression-free patients with ECOG performance status 0 and 1 was derived from the two bevacizumab phase III trials. Epidemiologic data as well as country-specific employment rates were applied stepwise to estimate the metastatic NSCLC patient population eligible to work and employed at diagnosis. It was assumed that 20% of progression-free patients would return to work after the induction phase while maintaining their prior employment status (40% full time). Cost savings related to productivity losses were calculated by applying German labor cost data to the derived population of interest. Results were weighted according to prescribing patterns of bevacizumab combination regimens (bevacizumab/cisplatin/gemcitabine or bevacizumab/carboplatin/paclitaxel). Sensitivity analyses were performed for employment patterns and labor cost. **RESULTS:** Mean cost savings were €21,171 at year 1 and €38,107 at year 1.5 per progression-free patient returning to work in Germany. a change in employment pattern (60% full time) led to an approximate 14% increase of savings for both time horizons (€24,195 at year 1 and €43,551 at year 1.5). a 10% alteration of labor cost in either direction resulted in cost savings that were 10% higher/lower. **CONCLUSIONS:** In addition to its PFS benefits bevacizumab-based therapy could result in considerable cost savings in progression free metastatic NSCLC patients.

PCN106

INDIRECT COST IN NON-SMALL CELL LUNG CANCER (NSCLC): A SYSTEMATIC LITERATURE REVIEW

Schmidt E[1], Stanisic S[1], Neumann M[1], Walzer S[2]
[1]Analytica International Inc., Loerrach, Germany; [2]F. Hoffmann-La Roche Pharmaceuticals AG, Basel, Switzerland

OBJECTIVES: Novel treatment options for NSCLC patients were shown to improve survival outcomes. Thus, it is of interest whether published evidence can be found on work productivity and employment consequences for this patient group and their informal caregivers, and on respective indirect cost data. **METHODS:** A systematic literature search from 1990 onward was performed using 19 bibliographic databases available via DIMDI (German Institute of Medical Documentation and Information), supplemented by searches for other publicly available sources such as abstracts at major health economic and clinical conferences, HTAs, and further gray literature. **RESULTS:** So far, published indirect cost data are elusive and rather limited to overall lung cancer. In lung cancer, indirect cost accounted for the major portion of total estimated cost, e.g., for Germany 78% (Ruff 2000) to 89% (Weißflog 2001). Indirect costs per case seem to increase with stage. In an Australian study, overall stage IV lung cancer patients had direct and indirect costs that were 19% higher than the average (Bishop 2009). The only indirect cost information on advanced NSCLC was reported by Romanus (2008) for the United States (mean wage loss per newly diagnosed end-stage IV NSCLC patient was $1697 [$126–$3371] in the first few months after diagnosis) and by Perrone (2004) for Italy (mean productivity loss per patient of €60,263). Employment rates of NSCLC patients were reported to be about 13% of NSCLC stage IIIb or IV, treated with 2nd line chemotherapy in Italy (Gridelli 2007). In the same population, the informal care given by the principal caregiver was the main assistance cost item with average 3-month cost of €2368 representing 74% of total assistance cost. **CONCLUSIONS:** The indirect cost burden of NSCLC has scarcely been assessed so far and needs further quantitative investigation, particularly in view of the use of new treatment options.

PCN107

FIRST-LINE TREATMENT OF METASTATIC NON-SMALL CELL LUNG CANCER (NSCLC) WITH BEVACIZUMAB AND SOCIETAL COST SAVINGS IN SPAIN

Stanisic S[1], Castro Carpeño JD[2], Walzer S[3]
[1]Analytica International Inc., Loerrach, Germany; [2]La Paz University Hospital, Madrid, Spain; [3]F. Hoffmann-La Roche Pharmaceuticals AG, Basel, Switzerland

OBJECTIVES: Bevacizumab-based therapy as first-line treatment of advanced or metastatic NSCLC is associated with longer progression-free survival (PFS) when compared with chemotherapy alone (Sandler et al. 2006; Reck et al. 2009). This study analyzes the implications of the clinical benefits of bevacizumab-based treatment for the societal costs in Spain. **METHODS:** Clinical inputs (PFS) were obtained from two clinical trials (E4599 and AVAiL) comparing a bevacizumab regimen (combined with carboplatin/paclitaxel or cisplatin/gemcitabine) with chemotherapy alone. Percentage of patients returning to work was estimated as 20% of all progression-free patients with ECOG performance status 0–1 in the age of ≤55 years. PFS percentage was applied to the incidence estimation for nonsquamous metastatic NSCLC in Spain after applying specific employment rate. Indirect costs were calculated using the human capital approach. Spanish labor costs available at EUROSTAT were applied after inflating to 2009 values. Employment patterns were suggested by the clinical experts (full time/part time), and were applied to the estimation of patients returning to work. Time frames for the calculations were 12 months and 18 months. **RESULTS:** Average cost saving per progression-free patient was €12,401 at 12 months and €22,322 at 18 months. Sensitivity analysis on changes in employment patterns from 40% full time/60% part time to 60% full time/40% part time increased cost savings per patient to €14,173 and €25,511 at 12 and 18 months, respectively. **CONCLUSIONS:** Treatment with bevacizumab-based therapy results in the reduction of productivity losses due to improved clinical benefits and hereby leads to considerable societal cost savings.

PCN108

SOCIETAL COST SAVINGS ASSOCIATED WITH BEVACIZUMAB-BASED TREATMENT IN NON-SMALL CELL LUNG CANCER (NSCLC) PATIENTS IN ITALY

Mueller E[1], Nuijten M[2], Ravera S[3], Stanisic S[1], Walzer S[4]
[1]Analytica International Inc., Loerrach, Germany; [2]Ars Accessus Medica, LG Jisp, Amsterdam, The Netherlands; [3]Roche S.p.A., Milano, Italy; [4]F. Hoffmann-La Roche Pharmaceuticals AG, Basel, Switzerland

OBJECTIVES: The high societal cost of lung cancer derives mostly from productivity losses associated with premature retirement and premature mortality (Weißflog et al. 2001). Bevacizumab-based therapy is associated with significantly improved progression-free survival (PFS) over chemotherapy alone in patients with advanced or metastatic NSCLC (Reck et al. 2009; Sandler et al. 2006), the most common form of lung cancer. The aim of this analysis was to assess the potential cost savings for Italy resulting from a higher number of progression-free metastatic NSCLC patients returning to work while treated with bevacizumab-based therapy. **METHODS:** Productivity losses were calculated on the basis of number of days lost due to illness. Country labor costs and employment rates were taken from EUROSTAT. It was assumed, based on expert opinion, that 20% of progression-free patients with ECOG performance status 0–1 and eligible to work would go back to their original employment status after the induction therapy. The percentage of PFS patients was calculated from two clinical